

CLEAN COPY OF AMENDED CLAIMS 4, 40, 42, 44

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4. (amended) The hearing amplification device of claim 3 wherein said at least one channel is configured to have its compression threshold initially set to a predetermined quiescent level, and wherein said at least one channel is further configured to adjust said compression threshold such that said compression threshold is in a range of about said predetermined quiescent level to about 20 decibels below an average sound level of at least a portion of said sound signal.

40. (amended) The device of claim 35 wherein an asymptotic representation of said transfer function TA is defined by the general formula:

$$TA = TA(u, A, U, p),$$

wherein for $|u| < U$:

$$TA(u, A, U, p) = Au$$

wherein for $|u| > U$

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$$TA(u, A, U, p) = \text{sgn}(u)AU \left| \frac{u}{U} \right|^p$$

wherein:

$$TA1 = TA1(u, U_c) = TA(u, A(U_c), U_c(Y), p);$$

wherein $U_c(Y) = U_1$ for Y less than U_1 and $U_c(Y) = Y$ for Y greater than or equal to U_1 , wherein U_1 represents a quiescent level for said compression threshold, wherein U_c represents an adjusted compression threshold, wherein Y represents a control signal from said controller for controlling said compression threshold, wherein u represents said transducer input, wherein p represents a compression power, and wherein A represents a magnitude of gain, wherein for Y less than U_1 :

$$A = G_1$$

and wherein for Y greater than or equal to U_1 :

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$$A = G_1 \left| \frac{U_1}{U_c} \right|^{1-p}$$

wherein G_1 represents the magnitude of a quiescent gain.

42. (amended) The device of claim 41 wherein an asymptotic representation of said transfer function is defined as a cascade of two functions TA1 and TA2, wherein both TA1 and TA2 are defined by the general formula:

$$TA = TA(u, A, U, p),$$

wherein for $|u| < U$:

$$TA(u, A, U, p) = Au$$

wherein for $|u| > U$

$$TA(u, A, U, p) = \text{sgn}(u)AU \left| \frac{u}{U} \right|^p$$

wherein:

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$$TA1 = TA1(u, U_c) = TA(u, A(U_c), U_c(Y), p);$$

wherein $U_c(Y) = U_1$ for Y less than U_1 , $U_c(Y) = Y$ for Y greater than or equal to U_1 and less than or equal to U_2 , and $U_c(Y) = U_2$ for Y greater than U_2 , wherein U_1 represents a quiescent level for said compression threshold, wherein U_2 represents said decompression threshold, wherein U_c represents an adjusted compression threshold, wherein Y represents a control signal from said controller for controlling said compression threshold, wherein u represents said transducer input, wherein p represents a compression power, and wherein A represents a magnitude of gain, wherein for Y less than U_1 :

$$A = G_1$$

and wherein for Y greater than or equal to U_1 :

$$A = G_1 \left| \frac{U_1}{U_c} \right|^{1-p}$$

wherein G_1 represents the magnitude of a quiescent gain; and

A14 wherein for $TA2=TA2(u)=TA(u,1,U_2,p_2)$, wherein u represents $TA1$, wherein U_2 represents said decompression threshold, and wherein p_2 represents $1/p$.

44. (amended) The device of claim 43 wherein an asymptotic representation of said transfer function is defined as a cascade of three functions $TA1$, $TA2$, and $TA3$, wherein $TA1$, $TA2$, and $TA3$ are each defined by the general formula:

$$TA=TA(u,A,U,p),$$

wherein for $|u| < U$:

$$TA(u,A,U,p)=Au$$

wherein for $|u| > U$

$$TA(u,A,U,p)=\text{sgn}(u)AU\left|\frac{u}{U}\right|^p$$

wherein:

$$TA1=TA1(u,U_c)=TA(u,A(U_c),U_c(Y),p_1);$$

A15 wherein $U_c(Y)=U_1$ for Y less than U_1 , $U_c(Y)=Y$ for Y greater than or equal to U_1 and less than or equal to U_2 , and $U_c(Y)=U_2$ for Y greater than U_2 , wherein U_1 represents a quiescent level for said compression threshold, wherein U_2 represents said decompression threshold, wherein U_c represents an adjusted compression threshold, wherein Y represents a control signal from said controller for controlling said compression threshold, wherein u represents said transducer input, wherein p_1 represents a first compression power, and wherein A represents a magnitude of gain, wherein for Y less than U_1 :

$$A=G_1$$

and wherein for Y greater than or equal to U_1 :

$$A=G_1\left|\frac{U_1}{U_c}\right|^{1-p}$$

wherein G_1 represents the magnitude of a quiescent gain;

A15 wherein for $TA2=TA2(u)=TA(u,1,U_2,p_2)$, wherein u represents $TA1$ or $TA3$, wherein U_2 represents said decompression threshold, and wherein p_2 represents $1/p_1$; and

wherein for $TA3=TA3(u)=TA(u,1,U_3,p_3)$, u represents $TA1$ or $TA2$, wherein U_3 represents said attenuation threshold, and wherein p_3 represents a second compression power.
